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**527 CMR: BOARD OF FIRE PREVENTION REGULATIONS**

**527 CMR 22.00: CANNON OR MORTAR FIRING**

**Section**

- 22.01: Purpose and Scope
- 22.02: Definitions
- 22.03: Permits
- 22.04: Certificates of Competency
- 22.05: Range Conditions and Other Prefiring Requisites
- 22.06: Magazines and Powder
- 22.07: Firing of Cannons
- 22.08: General Provisions

**22.01: Purpose and Scope**

- (1) 527 CMR 22.00 governs the firing of muzzle-loading cannons during patriotic celebrations and re-enactments, and covers all such artillery ranging from pre-Revolutionary War vintage to present-day facsimiles. This revised edition is effective January 1, 1984.
- (2) 527 CMR 22.00 shall not apply to any cannon exhibit only and in which explosives are not being used.
- (3) Ammunition for cannon shall be considered a Class C explosive when kept, handled, used, or transported for the purpose of cannon or mortar firing, provided such ammunition is in the form of prepackaged charges which do not exceed a total quantity of 20 pounds. In all other cases, ammunition for cannon, which is a Class B explosive, shall be subject to all the requirements therefor contained in 527 CMR 13.00.

**22.02: Definitions**

The following terms shall have the meanings assigned to them unless the context clearly indicates otherwise:

**Blank-fire.** The supervised discharge of cannon or mortar without projectile.

**Cannon.** Any gun designed to be fired from a carriage resting on the ground and which is loaded from the muzzle with non-rigid black powder charges.

**Competent Operator.** Any able-bodied person at least 21 years of age who holds a current certificate of competency for cannon firing from the State Fire Marshal.

**Display.** The supervised discharge of cannon or mortar, whether blank-fire without projectile, or live-fire with projectile.

**Head of the Fire Department.** As defined in M.G.L. c. 148, § 1.

**Live-fire.** The supervised discharge of cannon or mortar with projectile.

**Marshal.** The State Fire Marshal.

**Mortar.** Any cannon whose length is less than six times its bore diameter, or any cannon fired at an elevation of 45° or more from the horizontal.

**22.03: Permits**

- (1) A permit for the supervised firing of cannon shall be issued by the head of the fire department on permit forms furnished the fire departments by the Department of Public Safety.

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**527 CMR: BOARD OF FIRE PREVENTION REGULATIONS**

**22.03: continued**

(2) Application for permit shall be submitted to the head of the fire department in the municipality where the supervised firing is to take place not less than 15 days in advance of firing date, and shall state whether blank-fire or live-fire. Submission of this application is a guarantee that the cannons to be fired will be inspected by the competent operator and meet all safety requirements prior to firing.

(3) Upon receipt of application, the head of the fire department shall make an investigation of the pertinent facts set forth in application for the purpose of determining compliance with all provisions of law and of 527 CMR 22.00. Upon completion of the investigation, but not later than five days after receipt of application, the head of the fire department shall transmit one copy of application to the Marshal and one copy to the applicant with his endorsement thereon in compliance with provisions of law, or his reason for withholding such endorsement.

(4) No permit shall be issued for the supervised discharging of cannon with or without projectile unless the applicant exhibits a Certificate of Competency for Cannon Firing.

(5) No permit granted for a specific display shall be transferable.

**22.04: Certificates of Competency**

(1) Every supervised firing of a cannon with or without projectile shall be handled by a competent operator at least 21 years of age who holds a current Certificate of Competency for Cannon Firing issued by the Marshal.

(2) Any person desiring to obtain a Certificate of Competency shall make application in writing to the Marshal and shall submit to such examination and test as the Marshal may prescribe. Such certificate when issued shall continue in effect for a period of five years, and may be renewed without examination upon prior written request of the holder, provided it has not been suspended or revoked by the Marshal.

(3) Any violation of 527 CMR 22.00 or the terms of a permit may be cause for immediate revocation of Certificate of Competency.

**22.05: Range Conditions and Other Prefiring Requisites**

(1) No cannon shall be fired with ball, shot or projectile unless a permit for live-firing has been obtained from the head of the fire department and only on ranges approved by the head of the fire department. Such ranges shall be clear and unobstructed between discharge point and target area and for a safe distance to the rear of target in event of an overshoot. The target area shall not exceed 250 yards from the point of discharge.

(2) There shall be no permanent building, public highway, railroad, or other public way within the forward sector of a 180° arc having a radius of 100' from the muzzle of the cannon. A similar sector of 180° directed toward the rear 50' in radius shall be clear of all public ways, permanent buildings, or other obstructions.

(3) It shall be the responsibility of the competent operator to determine that the area in which the display is to be conducted is safe and that all operations are conducted in compliance with the requirements of 527 CMR 22.00. The competent operator, head of the fire department, the Marshal, or his authorized representative may order postponement of the display for any violation of 527 CMR 22.00.

(4) No discharging of any cannon shall be permitted during any windstorm in which the direction and velocity of the wind renders the display dangerous to the public safety and/or surrounding property.

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**527 CMR: BOARD OF FIRE PREVENTION REGULATIONS**

**22.05: continued**

- (5) There shall be no discharging of cannon between the hours of sunset and sunrise without prior written approval from the head of the fire department.
- (6) The head of the fire department shall designate the location and type of fire extinguishing equipment as may be required.
- (7) No firing of any cannon may be conducted unless the crew is present in adequate numbers and is fully trained.
- (8) No member of the gun crew shall be under 18 years of age.
- (9) Smoking shall be prohibited in the discharge area.
- (10) No person shall be allowed in the forward or flank zone of the muzzle of a cannon firing a projectile within a forward sector of 120° having a radius of 150% of the estimated range of the piece. No person shall be within 100' of the remaining area in the 180° sector forward of the muzzle.
- (11) The audience at a supervised blank- or live-firing of cannon shall be restrained behind lines 50' on the flank area back of the muzzle and 50' to the rear of the gun.
- (12) Unless otherwise allowed by the Marshal, no piece shall be discharged with blank ammunition unless all spectators are at a safe distance from the front of the piece and at least 50' to the rear or flank. Adjacent pieces must be at a safe interval.

**22.06: Magazines and Powder**

- (1) All ammunition for cannon shall be transported and temporarily stored at the firing location in the finished state in a portable magazine. Such magazine shall be constructed of at least 24-gauge sheet metal lined with a minimum of ¾" marine plywood or other non-sparking material, and shall be of sturdy sealed construction held together with non-sparking fastenings. A suitable lock and hasp of non-sparking material shall be provided.
- (2) In the discharge area, a ready-service box constructed of wood with non-sparking fastenings and cover designed to be self-closing shall be positioned at ground level approximately 20' to the rear of the piece being served with the hinges toward the piece.
- (3) All magazines and ready-service boxes shall be closed prior to the loading of each charge of the piece being served and adjacent pieces. Ready-service boxes for each gun should contain the minimum number of cartridges required for the gun during that particular display. Magazines and ready-service boxes shall at all times be under the control of a competent member of the gun crew.
- (4) No loose or bulk powder other than priming powder in quantities not exceeding ½ ounce shall be used in the firing of any cannon, and no loose or bulk powder shall be transported or stored in any portable magazine with charges.
- (5) All charges shall be made up of commercially manufactured black powder only, and such charges prepared for the demonstration firing shall be made of completely combustible material or a non-combustible material such as foil. The completely combustible charge shall be encased in aluminum foil or other spark-proof material which shall be removed at the muzzle of the cannon in the case of display firing. No wadding of any kind is permitted in blank firing.
- (6) The amount of black powder used in each charge shall be such as to not present an undue hazard to persons, property, or the piece itself.

22.06: continued

- (a) In no case shall any charge for cannons exceed four ounces of power per inch of bore diameter.
- (b) Powder charges for mortars shall not exceed four ounces per inch of chamber diameter.

22.07: Firing of Cannons

- (1) No torch or open-flame device shall be used to ignite any charge to be fired from a cannon.
- (2) All cannons used to fire a projectile shall be provided with an instant source of ignition such as an electrical squib or bridge wire or percussion cap or other approved instant firing device. Exception to the foregoing shall apply to the use of fuses for the firing of mortars.
- (3) No firing of any cannon shall be conducted unless the weapon contains a seamless steel safety sleeve and has been magnafluxed or tested by other means to insure it is in safe operating condition. Original guns including original brass or bronze guns without safety sleeves may be used provided they have been tested by magnafluxing or X-ray or other equivalent procedure.
- (4) Projectiles shall not be so constructed as to develop any unsafe pressures; and no combustible, explosive, or pyrotechnic projectiles may be used.
- (5) The maximum rate of fire of any cannon shall not exceed one round in three minutes. Reloading shall not commence until a minimum of two minutes has elapsed since the worming and wet sponging has been completed after firing.
- (6) The piece shall be wormed and wet sponged between shots and the vent stopped from the time the worm enters the muzzle until the rammer is removed from the bore after the cartridge is rammed in blank-firing, or the projectile is rammed in live-firing.
- (7) At no time shall any cannon be moved or left unattended while loaded or during a misfire until the piece has been cleared.
- (8) In the event of a misfire, the following steps shall be taken by the competent operator:
  - (a) The gunner shall give an audible warning.
  - (b) No personnel shall approach the front of the muzzle.
  - (c) A mandatory three minute cooling off period shall be observed.
  - (d) The piece shall be reprimed from a safe position and a repeated attempt made to fire the piece.
  - (e) If the attempt to refire the piece is unsuccessful, the piece shall be flooded with water through the vent and allowed to soak for a period of at least one hour unless the water or compressed gas can be used to flush the charge out of the muzzle.
  - (f) The projectile and/or charge shall be removed through the muzzle.
- (9) If, after a display, the competent operator has reason to believe that there are any unignited charges or remnants thereof containing explosives in the area, he shall make a thorough search of the area for such explosives. The responsibility for disposition of same shall be assumed by the competent operator.

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**527 CMR: BOARD OF FIRE PREVENTION REGULATIONS**

**22.08: General Provisions**

(1) Any explosion, fire, or other accident occurring in connection with the keeping, storage, manufacture, handling, transportation, supervised display or other disposition of ammunition for cannon causing loss of life or injury to any person or damage to property shall be immediately reported to the Marshal by the competent operator, giving a detailed account of same and confirmed in writing.

**REGULATORY AUTHORITY**

527 CMR 22.00: M.G.L. c. 22, § 14; c. 148, §§ 9 and 10.

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